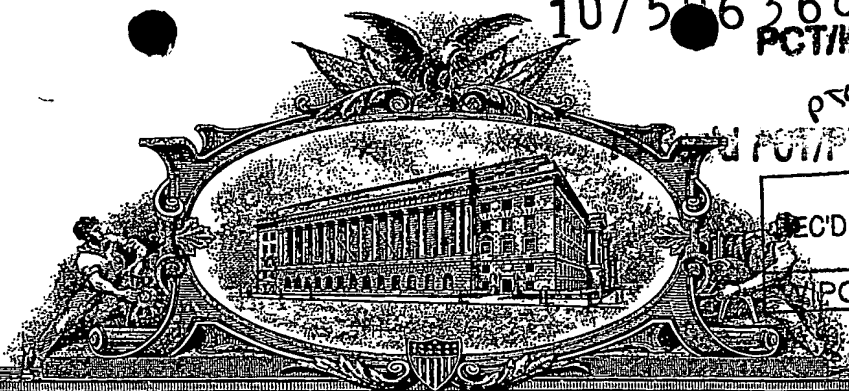10/506368
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April 04, 2003

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APPLICATION NUMBER: *60/362,309*
FILING DATE: *March 07, 2002*

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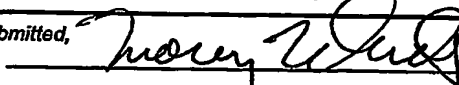
N. WILLIAMS
Certifying Officer

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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

Express Mail Label No. EL 825522614 US

INVENTOR(S)

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☒ Additional inventors are being named on the 1 separately numbered sheets attached hereto

TITLE OF THE INVENTION (280 characters max)

A SYSTEM AND METHOD FOR TRAVELER INTERACTIONS MANAGEMENT

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ENCLOSED APPLICATION PARTS (check all that apply)

☒ Specification Number of Pages | 9 | ☐ CD(s), Number |
☒ Drawing(s) Number of Sheets | 1 | ☐ Other (specify) |
☐ Application Data Sheet. See 37 CFR 1.76

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT

☐ Applicant claims small entity status. See 37 CFR 1.27.

☒ A check or money order is enclosed to cover the filing fees

☒ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: 50-0552

☐ Payment by credit card. Form PTO-2038 is attached.

FILING FEE AMOUNT ($) 160.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☐ No.
☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____.

Respectfully submitted,
SIGNATURE _____

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Date   March 7, 2002

REGISTRATION NO. (if appropriate)   36,968

Docket Number: 174.1021P

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

PROVISIONAL APPLICATION COVER SHEET
Additional Page

Docket Number	174.1021P

INVENTOR(S)/APPLICANT(S)		
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Number 2 of 2

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US PROVISIONAL PATENT APPLICATION

A SYSTEM AND METHOD FOR TRAVELER INTERACTIONS MANAGEMENT

Related Applications:

US Provisional patent applications 60/306,142 for CUSTOMER INTERACTION CONTENT BASED APPLICATION, filed on 19 July 2001; 60/264,725 for VIDEO & AUDIO CONTENT ANALYSIS SYSTEM, filed on 30 January 2001; and 60/317,150 QM & RECORDING SOLUTIONS FOR WALK-IN CENTERS, filed 3 September 2001 are related to the present invention and are incorporated by reference herein.

Field of Invention: The present invention relates to audio and data synchronized recording and retrieval, to real-time data management and to security systems in general, and to a system and method for traveler interactions management, specifically.

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Background of the Invention

The tragic events of 11th September 2001 exposed more loopholes in the security of commercial air transportation, including lack of control over the identity and whereabouts of passengers boarding the aircraft at the airport.

The process of traveling by air begins with purchasing a ticket and continues through certain stations in the embarkation airport, the flight itself and more stations in the destination airport. Most of the stations are manned by agents, E.g. traveler agent, check in agent, security personal etc., but some are equipped with passive monitoring or other devices. The interaction between traveler and agents occurs, for example, in the following stations:

- Ticket purchase – this could be at the travel agent, by web purchase, airport ticketing counters, or e-tickets.
- Check-in counters, including Curb-Side counters and VIP check-in.
- Check-in security
- Passport control
- Passenger and hand luggage screening.
- Baggage screening
- Boarding gates
- Baggage claim
- Immigration
- Customs
- Transfer counters; and the like.

Presently all these stations operate independently of each other (except ticketing) and data, available or accumulated from the interactions with the traveler is not shared. The Traveler is not identified and verified at each station, and no verification is done against available external databases.

As a result agents are not alerted in case of traveler discrepancies, which might have grave implications on air traffic safety. It is impossible to trace specific traveler's route through the airport and generally speaking security depends today solely on the quality and performance of agents. As no video or audio monitoring is available at the airport stations, recording of traveler/agent interactions is impossible, which results in lack of

real-time evaluation of agent's performance for quality assurance and limited agent training capabilities on real-time situations. There is a need for a system and method that will overcome the deficiencies of the prior art by providing a system and method for traveler interactions management.

Detailed Description of the Invention

The present invention provides for a system and method for traveler interactions management. The invention discloses a system and method according to which audio and video is captured at specific locations along the traveler's path. The data is recorded in real-time. The data can be accessed in real-time or later analyzed to establish the route the traveler has passed and the handling of the traveler by each agent along the travel path. The system can be used over a long span of time (from one travel segment to months and even years) during which traveler interactions are managed. Travelers can perform numerous interactions with the system and each will be recorded and placed in the system's database and analyzed. While the present invention describes such interactions within an airport, it will be appreciated by those skilled in the art that such interactions can be managed in other travel junctions including for example in ports, bus and train stations and the like.

Turning now to Fig. 1 wherein the system of the present invention is disclosed. Stations 10a, 10b, 10c, 10n are computerized stations. Stations 10a, 10b, 10c, 10n comprise a computerized device having a screen display and a microphone. Stations 10a, 10b, 10c, 10n, can also comprise a video capturing device such as a video camera and the like. Stations 10a, 10b, 10c, 10n can be linked to system 14 via a communications infrastructure, such as a network interface card, acoustic coupler, modem device, wireless devices any of which may communicate to system 14 via LAN/WAN network a cellular network, the Public Switch Telephone Network and the like.

System 14 is a computerized system. System 14 comprises the following devices:

1) Video recording device for recording video data from a plurality of video cameras located at stations 10a, 10b, 10c, 10n. Recording is achieved by the recording module sending data to a recorder such as a tape, DAT tape, hard-disk or to any other known storage device. The recording device can allow the recording of data together with

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recording related information such as the time of recording, channel number, frame per sec, and such similar and related information.

2) Audio recording device for recording audio data from a plurality of microphones located at stations 10a, 10b, 10c, 10n. The video and audio recording devices can comprise a single recording device or module for recording both video and audio.

3) Capturing device for capturing data from a plurality of computer screens located at stations 10a, 10b, 10c, 10n. Capturing data from computer screens is accomplished by the capturing module accessing the memory device of the computer screen and retrieving the computer screen information. Another method of capturing computer screens are used by a system such as NICE Universe product. The agent's software (such as a CRM software) will likely include fields in which the agent will insert his comments as to the traveler or fulfill important data about he traveler (such as language skills, general behavior and so forth).

4) Storage device for storing the data captured and the recordings. The recording and data capturing operations are synchronized on the same time base. A storage device 24 is available to system 14 for long-term data storage. Such storage device can be a hard disk, tape, RAID, Jukebox and the like. The data captured and the recordings may be stored in associations with various parameters. Such parameters may include the time of recording, the date of recording, channel number, retention period, migration path, position etc.

5) Retrieving device for retrieving data recorded by the system and storing the retrieved data on storage device 24. The data recorded and captured can be stored according to various key features such as, for example: time, date, user ID, station and the like.

6) Additional capturing device for capturing data from a plurality of devices related to security and identification such as, for example bar-code tag readers, optical document readers, biometric devices (face, eye-scan, palm print), metal detectors, and x-ray devices and the like.

7) Database access device for accessing and communicating with external databases located locally or via the Internet 18 or another telecommunications network. Accessing and communicating with external databases can be accomplished through the use of a communication device such as a modem device, LAN/WAN network adapters and other like devices. Accessing a local database is accomplished using standard Open Data Base Connectivity (ODBC) or using Link Server technology and the like.

8) Database building device for building a database in storage 24 of the information gathered and recorded in respect to each traveler. Building a database is accomplished by entering the traveler related data into the database according to various key features such as: time, date, user ID, station ID and the like. This device can also perform an automatic analysis of the information captured and recorded. If the analysis meets certain rules the system may send alerts or warnings to agents and security personnel and or directly to the police.

9) Searching device for enabling an operator 20 at the Control Center 22 to search the database 24 for a specific traveler, follow the traveler's itinerary in the airfield or other locations, and correlate certain data items to find discrepancies.

10) Delivery device for sending selected information retrieved from the Traveler's database to one or more of the stations 10 in the itinerary.

System 14 can be implemented in association with a software system such as NiceVision® (Suit) by Nice Systems Ltd. of Ra'anan Israel. Nice Vision® is a digital video recording system for the closed circuit TV security and public safety industries. NiceVision® provides facilities using multiple cameras with continuous multi-channel, high motion video and audio digital synchronized recording and tools for video data retrieval.

The person skilled in the art will appreciate that the system and method described herein can be linked and used in conjunction with integrated security knowledge management solutions such as a full access control system, which can serve as partial

infrastructure for the present invention. One example of such a system is the OnGuard Access system manufactured by Lenel System International, Pittsford, New York.

Stations 10 are the stations located in an airport or other port that each traveler must go through on his way, to and from the airplane or the vehicle. Examples of the stations 10 are ticket purchase – this could be at the travel agent, by web purchase, airport ticketing counters, or e-tickets; check-in counters, including curb-side counters and VIP check-in; check-in security; passport control; passenger and hand luggage screening; baggage screening; boarding gates; baggage claim; immigration; customs; transfer counters; and the like. Station 10 can be equipped with a video camera for traveler visual identification. Other image capturing devices can also be located at the relevant stations. Stations 10, where a dialog is expected between the traveler and an agent also comprise a microphone and/or computer terminal. At some of the stations 10 special detection, measuring or sensing equipment is installed, which may feed digital data to system 14 (such as: bar-code tag readers, optical document readers, biometric devices (face, eye-scan, palm print), metal detectors, and x-ray devices and the like)

A Local Area Network (LAN) 12 or other local area networks can be used in the airport area to connect all stations 10 and the Control Center 22. This LAN will be also connected to the Internet 18 or other communications network, by which the system 14 communicates with relevant data sources 16 located anywhere in the world. Such data sources could be local police files, Interpol or FBI files and the like. The same LAN permits the operator 20 to communicate by electronic mail with other security facilities to get information or clear certain issues. The present invention is also operative to issue warnings and alerts in real time which are issued in response to rule based analysis performed by the system. The rule based analysis can be based upon certain predetermined or adaptive profiles.

The method of operation is explained in further detail in Fig.2. In the example are shown six stations 10a-f, one control center 22 and the interconnecting LAN 12 and Internet 18. Persons skilled in the art will appreciate that at least one or a plurality of stations can be employed in association with the present invention. Similarly, more than one control center 22 or communications network are contemplated by the present invention. In the preferred embodiment of the present invention, stations 2 to 6 as well

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as the control center 22 are located within the airport, while station 1 might be inside or outside the airport.

Traveler 30 is going through the itinerary from purchasing a ticket at station 1 to boarding the airplane at station 6.

For this example let us assume the following:

- Station 1 is equipped with at least a computer, a microphone and a digital video camera. These devices, equipped with interfaces, feed data to system 14 (of Fig.1) installed in the control center 22.
- Station 2 is equipped with baggage screening equipment, with or without an agent 32, and a digital camera. These devices, equipped with interfaces, feed data to system 14 (of Fig.1) installed in the control center 22.
- Station 3 is equipped with at least a computer, a microphone and a digital video camera. These devices, equipped with interfaces, feed data to system 14 (of Fig.1) installed in the control center 22.

  At Station 3 a tag 36 (shown as an example in Station 3 only) is given to the traveler 30 for personal identification. The tag 36 could be for example, a boarding card marked by a printed bar code, or a bar-code sticker attached to the boarding card or any other like marking that may identify the tag 36. Other possibilities are biometrics or electronic identification means that could be subsequently be read by the agents 32 in such additional stations where the traveler passes through. The information in the tag 36 is automatically transmitted to the control center 22 in purpose to open a personal traveler's file in system 14.

- Station 4 is equipped with at least a computer, a microphone and a digital video camera. These devices, equipped with interfaces, feed data to system 14 (of Fig.1) installed in the control center 22. In station 4 additional identification equipment could be installed such as, for example, Passport Validation Readers.
- Station 5 is equipped with a hand baggage and passenger screening equipment, with an agent 32, and a digital camera. These devices, equipped with interfaces, feed data to system 14 (of Fig.1) installed in the control center 22.

- Station 6 is equipped with at least a computer, a microphone and a digital video camera. These devices, equipped with interfaces, feed data to system 14 (of Fig.1) installed in the control center 22.

Traveler 30 is likely to go through some or all of the stations 1 to 6, as per the directions valid at the specific port. While going through the specific stations traveler 30 is manually or automatically identified by his tag 36 and data is collected at the station, communicated to the system 14 and stored in database 24 in the travelers' personal file. Such data could be, for example:

- At station 1, details known to the agent 32 about traveler 30 such as address, passport number, mode of payment for the ticket, previous transactions at the same stations, and video and audio recordings of the present transaction, and the like.
- At station 3, details of the seating in the airplane, baggage weight and identity, hand baggage to be hand carried by the traveler and video and audio recordings of an "event".
- At station 4, details on the passport presented by the traveler 30, results of any checks done by the Passport Officer and the video and audio recordings of the conversation between traveler and officer.
- At station 5, screen capture of the traveler's baggage and video and audio recordings of the screening "event".

System 14 stores data on the same traveler 30 going through the process of boarding the airplane. Data is collected and updated once the traveler 30 is processed at a specific station. A specific security application use the data stored in database 24 to analyze, for example, the following data, having relevance on issues of flight security:

- Cross check the given identity and appearance of the traveler with databases of, for example, the Interpol or FBI related to "wanted" persons.
- Verify (tag 36 and visual) that the same traveler 30 passed all designated stations.
- Identify suspected behavior of traveler 30.
- Identify suspected luggage of traveler 30.
- Cross correlate the information collected at the stations 10 for discrepancies.

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- Cross check with previous travel interactions from other times or dates.

System 14 can be used also for quality assurance of the interaction between agents 32 and travelers 30. As the interaction agent-traveler at, for example stations 1, 3, 4, 5, 6 is captured (video, audio and computer), a qualified examiner can analyze the records collected in database 24 and apply known criteria to grade the agents 32 involved.

The records in database 24, which reflect real life occurrences and behavior of both travelers 30 and agents 32, can be used for training purposes of agents 32, operators 20 and security personnel.

System 22 can be used for other purposes than supervision of airports, for example: central train stations, hospitals and secured installations.

The person skilled in the art will appreciate that what has been shown is not limited to the description above. Many modifications and other embodiments of the invention will be appreciated by those skilled in the art to which this invention pertains. It will be apparent that the present invention is not limited to the specific embodiments disclosed and those modifications and other embodiments are intended to be included within the scope of the invention. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

Claims:

1. A system for traveler interactions management

   capturing information at predetermined locations along a traveler path;

   recording the captured information;

   storing the recorded information on a storage device, and

   analyzing the recorded information.

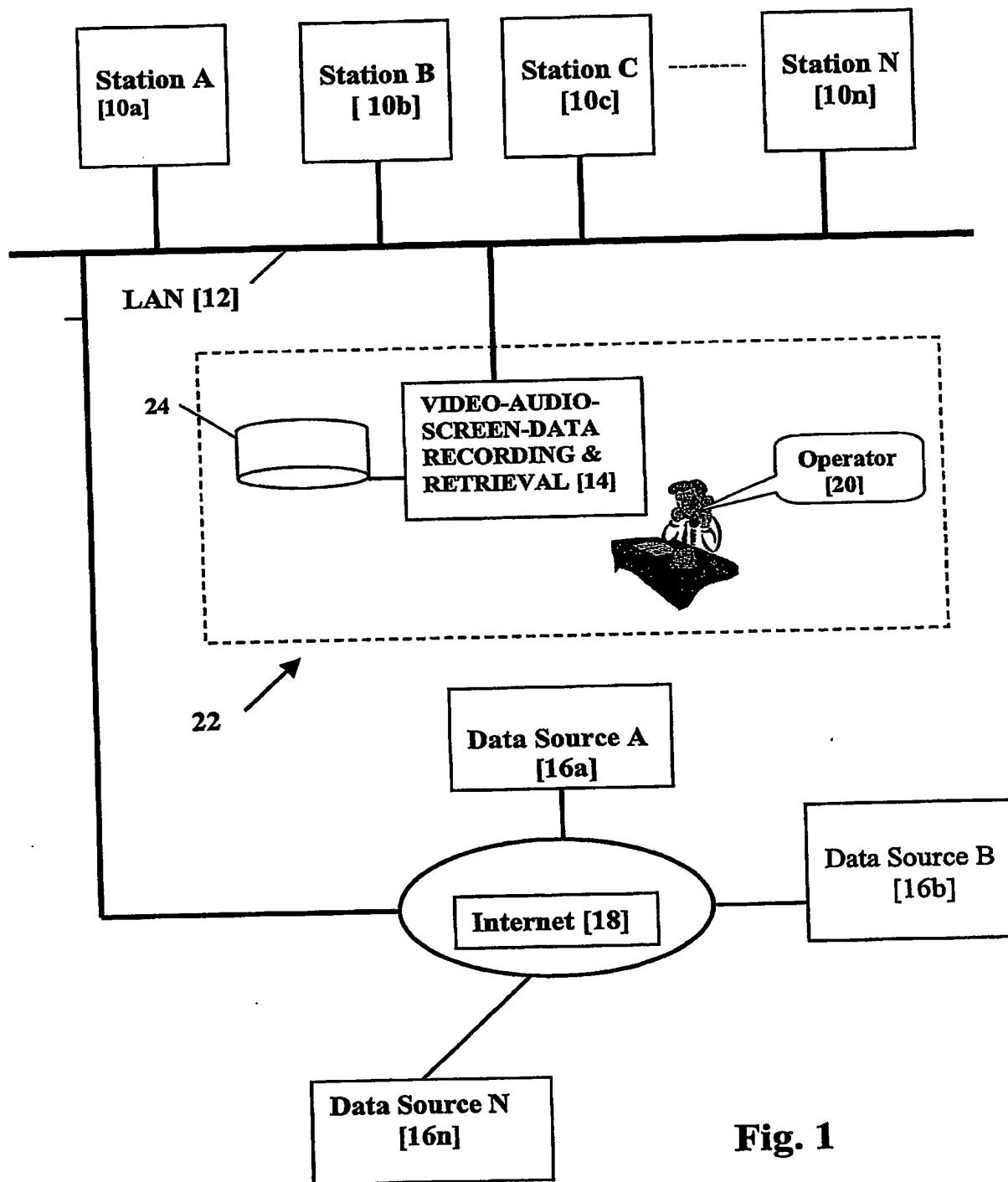| Station A [10a]	Station B [10b]	Station C [10c]	- - - - - -	Station N [10n]

LAN [12]

24

VIDEO-AUDIO-
SCREEN-DATA
RECORDING &
RETRIEVAL [14]

Operator [20]

22

Data Source A [16a]

Data Source B [16b]

Internet [18]

Data Source N [16n]

Fig. 1